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ago, d/a ltr, 29 apr 1980

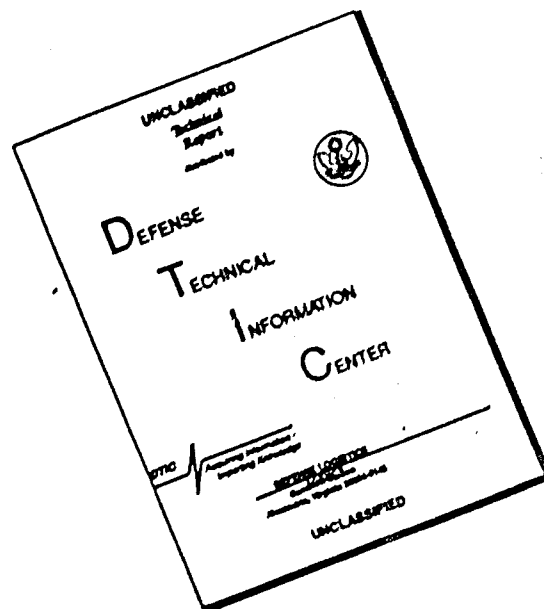
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DEPARTMENT OF THE ARMY
OFFICE OF THE ADJUTANT GENERAL
WASHINGTON, D.C. 20310

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AGDA-A (M) (30 Mar 71) FOR OT UT 704048

2 April 1971

SUBJECT: Operational Report - Lessons Learned, Headquarters, 36th Engineer Battalion, Period Ending 31 October 1970

AD No. _____

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1. The attached report is forwarded for review and evaluation in accordance with para 4b, AR 525-15.
2. The information contained in this report is provided to insure that lessons learned during current operations are used to the benefit of future operations and may be adapted for use in developing training material.
3. Information of actions initiated as a result of your evaluation should be forwarded to the Assistant Chief of Staff for Force Development, ATTN: FOR OT UT within 90 days of receipt of this letter.

BY ORDER OF THE SECRETARY OF THE ARMY:

Verne L. Bowers
VERNE L. BOWERS
Major General, USA
The Adjutant General

1 Incl
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DEPARTMENT OF THE ARMY
HEADQUARTERS 36TH ENGINEER BATTALION (CONST)
APO San Francisco 96357

EGFE-OP

14 November 1970

SUBJECT: Operational Report-Lessons Learned (RCS CSFOR RI) For Quarterly
Period Ending 31 October 1970

Commander in Chief, United States Army, Pacific, ATTN: CPOP-OT, APO 96588
Commanding General, US Army, Vietnam, ATTN: AVHGC-OH, APO 96307
Commanding General, US Army, Engineer Command, Vietnam (P) ATTN: AVCC-MO
APO 96491
Commanding Officer, 20th Engineer Brigade, APO 96491
Commanding Officer, 34th Engineer Group, APO 96215

1. SECTION I, Operations-Significant Activities

a. From 1 August to 31 October 1970, the 36th Engineer Battalion construction effort was directed primarily towards the final upgrading of National Highway 4 from My Thuan to Can Tho and the restoration of Interprovincial Highway LTL-7A from Vinh Long to Tra Vinh. Projects completed were the upgrade of MACV Advisor Facilities at Cang Long, Cai Lay, and Cau Ke, Land Clearing, and the upgrade of the antenna field at Con Son Island.

b. During the reporting period a total of 20.0 kilometers of double lane (24 feet) single surface asphaltic concrete was placed on National Highway QL-4, for a total percent complete of 99.5%. Work began on Bridge #8 (240 foot length), and it is 2% complete.

c. During the period, work continued on Interprovincial Highway, LTL-7A with the widening of the existing 6 meter roadway to an 8 meter road with a 7 meter traveled way. The progress of LTL-7A from Vinh Long to Ap An Dien includes the completion of 4.0 kilometers/3127 cubic yards subbase, 1.4 kilometers/8,607 cubic yards 3" base course, 8.0 kilometers/3370 cubic yards of surface preparation, and 2.4 kilometers/3135 tons of asphalt concrete paving. The project from Vinh Long to Ap An Dien is 76% complete. Bridge #12 (60 foot length) was completed on 4 October 1970 with work in progress on bridge #5, bridge #6, and bridge #11. Presently progress is 98% complete on bridge #5 (220 foot length), 15% complete on bridge #6 (110 foot length), and 16% complete on bridge #11 (180 foot length).

d. During the period work began on Interprovincial Highway LTL-7A from Ap An Dien to Tra Vinh with 7.0 kilometer of clearing and grubbing completed. Work began on bypass approaches for bridge #22 and #21.

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e. During the period, the Land Clearing Team cleared 1065 acres at Tinh Bien and 3 acres at Tra Vinh. On 26 September 1970 the Land Clearing Team was demobilized.

f. During the period, the battalion continued operation of the Vinh Long rock off-loading facility and the Ap Nuoc Xay rock off-loading facility. Monthly off-loading production rates for Vinh Long were 19,675 tons in August, 28,227 tons in September, and 32,470 tons in October. Monthly off-loading rates at Ap Nuoc Xay were 10,231 tons in August 11,748 tons in September, and 9,468 tons in October.

g. During the period the battalion's 80 - 120 ton per hour Barber Greene 848 asphalt plant produced 30,732 tons of asphalt concrete.

h. During the period, the battalion's Cedar Rapids concrete batch plant produced 809 cubic yards of concrete.

i. During this period, the battalion's Personnel Section inprocessed 436 personnel as replacements and outprocessed 308 personnel for reassignment or separation.

j. The 523d Engineer Company came under the operation control of the Engineer Battalion on 24 September 1970.

SECTION II, Operations-Organization

a. Organic Units

- (1) HHC, 36th Engineer Battalion (Const)
- (2) A Co, 36th Engineer Battalion (Const)
- (3) B Co, 36th Engineer Battalion (Const)
- (4) C Co, 36th Engineer Battalion (Const)
- (5) D Co, 36th Engineer Battalion (Const)

b. Operational Control

523d Engineer Company (PC)

3. SECTION III, Lessons Learned, Commander's Observations, Evaluation and Recommendations

a. Personnel: None

b. Intelligence: None

c. Operations:

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(1) Task organization Concept

(a) Observation: It was observed that it took a line platoon just as long to build its second bridge as it did its first and that each platoon repeated mistakes. It was learned that because of the rapid turn-over rate the men who constructed one bridge rotated before starting the next one. The experience gained on each bridge was lost and each bridge crew had to be trained in all steps of bridge building.

(b) Evaluation: The normal TOE organization is designed to accommodate all kinds of contingencies, which leads to inefficiency over a long term construction project such as the LOC program. Therefore, to develop expertise in the various bridge building tasks, the battalion was reorganized into the task concept. One company was given the mission of building bridges and was given operational control of two additional construction platoons. Each platoon was given the mission to construct certain components of the bridges. For example one platoon was designated the pile driving platoon and given responsibility for driving piles on all bridges. Another platoon was given the task of building concrete forms. Another company was given the mission for all earthwork and was given an additional earthmoving platoon. The first month that the task concept was implemented the battalion drove over 8000 feet of pile which was $2\frac{1}{2}$ times the monthly average prior to that date. As efficiency improves it is estimated that the pile driving capability will increase to 12,000 feet per month. The quality and efficiency of the other bridge tasks is also improving at a rapid rate.

(c) Recommendation: Whenever an engineer unit has a long range construction program the task concept should be considered. The task concept requires greater amount of coordination, control and presents minor problems in the administrative and logistical areas.

(2) Leveling Bearing Plates

(a) Observation: It was found to be quite difficult to keep bridge stringer bearing plates level while grouting. On bridge #5 LTL-7A, nuts were placed on the stud bolts underneath the bearing plate, and the plate was then leveled by adjusting the nuts. After the plate was leveled it was removed and grout was placed under it. The plate was then placed on the grout while it was still wet and pressed down to the nuts on the studs.

(b) Evaluation: The nuts not only insured that the bearing plates would be level, but it also added strength to the grout under the plate.

(c) Recommendation: That this procedure be used on all future bridge abutments and pier caps.

(3) Placing Deck Slabs on Bridges

(a) Observation: It was found to be much easier to weld a row of precast concrete deck slabs to the stringers of a bridge before another row is placed.

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Period Ending 31 October 1970

(b) Evaluation: Placing all of the deck slabs on a bridge before beginning to weld them in place requires scaffold or suspension devices to support the welder underneath the bridge. It also means that all of the welding has to be done over-head which is not very comfortable or safe. It was found that if 2 welders were employed while the deck slabs were being placed the placing of the slabs would not be slowed down and the scaffold or suspension system would not have to be used.

(c) Recommendation: That 2 welders be employed if possible when placing deck slabs.

(4) Splicing Pile

(a) Observation: It requires more time to splice pile than the actual driving of them.

(b) Evaluation: It takes an average welder one hour to cut, dress and weld a splice on a pile. A good welder can do it in about 30 minutes. It was found that 2 average or better than average welders can splice a pile in 15 to 20 minutes. Thus a pile driving crew can almost double their output with 2 welders on each pile driving crew.

(c) Recommendation: Whenever possible 2 welders be used on each pile driving crews to cut, dress, and splice the piles.

(5) Driving Sheet Pile

(a) Observation: Past practice was to drive one piece of sheet pile to bearing before driving the second piece. It was observed that it was difficult to keep the sheet piling interlocked. Some of the piling would bind making it impossible to drive the sheet pile to the proper depth and to stay interlocked with adjoining piles.

(b) Evaluation: The sheet piles could be successfully driven to the proper depth by setting a template, interlocking an entire wall of sheet pile, and then driving all the piles to the same depth in small increments.

(c) Recommendation: Sheet piling should be driven to the proper depth by first interlocking all piles and driving all piles to the desired depth in small increments.

(6) Seal Coat between shoulders and asphalt roadway.

(a) Observation: It was observed that small longitudinal cracks along the edge of the asphalt roadway began to appear towards the end of the rainy season.

(b) Evaluation: Subsurface investigations were made which indicated that water had penetrated to the base course through the asphalt roadway and DBST shoulders. It was determined that the base course and subbase were sound but when water reached the base course it began to slip causing surface cracks which would eventually develop into larger failures.

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The water penetration was stopped by applying a seal coat of RC 800 approximately 2 feet on the pavement and 2 feet on the shoulder. The RC 800 is then covered with a thin layer of sand and rolled with a self propelled pneumatic tired roller.

(c) Recommendation: Extreme care must be taken to prevent water from penetrating through or between surface courses on highways. A seal coat can effectively stop this penetration between shoulders and roadways.

(7) Removal of MX19 Matting Connector Bars

(a) Observation: The removal of MX19 matting connector bars can be quite difficult, especially when the matting has been damaged or buckled.

(b) Evaluation: By fabricating a connector bar remover using 5/16" chain 18" long spot welded to a 20" long piece of 2" pipe (See Figure 1) the bars can be easily removed by jerking the pipe. A piece of 1/4" chain is cut and inserted into the last link of the 5/16" chain to make a hook. This hook is replaced as it becomes unservicable.

(c) Recommendation: It is recommended that a connector bar remover be used when large amounts of MX19 matting are being removed from a site.

(8) Hauling operations:

(a) Observations: It was found to be quite difficult to keep 5 ton drivers and especially local national drivers, accounted for and to prevent unscheduled stops along the haul road. All trucks were convoyed along the haul road to eliminate this.

(b) Evaluation: The convoy operation virtually eliminated unscheduled stops and increased production. An additional benefit was speed control. With the most responsible drivers in the first and last vehicles the vehicle speeds were kept down and hence accident probability was reduced.

(c) Recommendation: Convoys be used whenever feasible in haul operations.

(9) DBST

(a) Observation: Most rock received by this battalion was not suitable for DBST because of the high percentage of fines. The dryer and gradation control unit of the asphalt plant was used to dry and screen rock for this purpose.

(b) Evaluation: Production of 500 tons of 3/4" AA can be produced in a one day operation. The product should be covered to keep it dry and to prevent dust from the asphalt plant or crushing operations from settling on it.

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(c) Recommendations: Use of an asphalt plant should be considered when ever suitable rock is not acceptable for DBST.

(10) Optimum ripping depth on a two layer macadam roadway (LTL-7A).

(a) Observation: Ripping, regrading, and compacting greatly increases the trafficability of a potholed two layer macadam roadway.

(b) Evaluation: The majority of potholes on LTL-7A are due to surface failures. Ripping at a depth of 3 inches breaks up the top layer of the two layer macadam and either eliminates the potholes or provides enough rock to be graded into the larger potholes for repair. Leaving the bottom layer of the two layer macadam undisturbed maintains the existing strength of the roadway.

(c) Recommendations: The optimum ripping depth to improve the trafficability of a potholed two layer macadam roadway should be no deeper than the top layer of the macadam.

d. Training: None

e. Logistics: None

f. Maintenance: None

g. Supply: None

h. Medical: None

1 Incl
as

William R. Potter
WILLIAM R. POTTER
LTC, CE
Commanding

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EGF-OP (14 Nov 70) 1st Ind
SUBJECT: Operational Report of 36th Engineer Battalion for Period Ending
31 October 1970, RCS CSFOR-65(R2)

DA, HEADQUARTERS 34TH ENGINEER GROUP (CONST), APO 96215 17 November 1970

TO: Assistant Chief of Staff for Force Development, Department of the Army,
Washington, D.C. 20310

1. The ORL submitted by the 36th Engineer Battalion has been reviewed, and is considered comprehensive and of value for documentation for the reporting unit's activities and experiences.
2. The recommendation presented in Section II are considered valid and worthy of consideration.

FOR THE COMMANDER:


MARSHALL A. STEVENS
CPT, AGC
Adjutant

AVBX-OS (14 Nov 70) 2nd Ind

SUBJECT: Operational Report - Lessons Learned (RCS CSFOR R1) for
quarterly period ending 31 Oct 1970.

DA, HEADQUARTERS, 20TH ENGINEER BRIGADE, APO 96491 21 NOV 1970

TO: Commanding General, United States Army Engineer Command Vietnam
(Prov), ATTN: AVCC-MO, APO 96491.

1. Submitted in accordance with letter, AVCC-MO, CG, USAECV(P) dated
13 July 1970, subject: Operational Reports - Lessons Learned (ORLL's).

2. This headquarters concurs with the submitted report and comments of
the indorsing headquarters.

FOR THE COMMANDER:

D.L. MC BRIDE

D.L. MC BRIDE

1LT, CE

Assistant Adjutant

Copies furnished:

CO, 34th Engr Gp

CO, 36th Engr Bn

AVCC-MO (14 Nov 70) 3rd Ind

18 DEC 1970

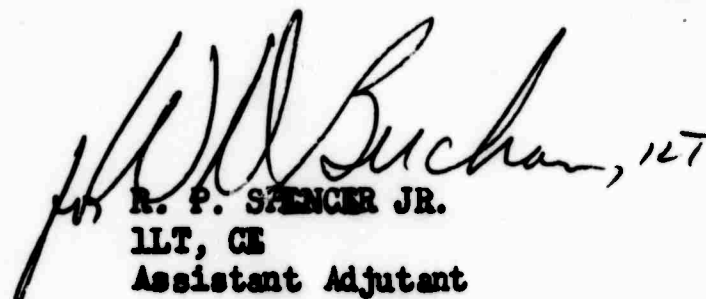
SUBJECT: Operational Reports - Lessons Learned for the 36th Engineer Battalion, Period Ending 31 October 1970, HCS CSFOR-65 (R2)

Headquarters, United States Army Engineer Command Vietnam, APO 96491

TO: Commanding General, United States Army Vietnam, ATTN: AVHDO-DO, APO 96375

1. The significant activities and lessons learned have been reviewed and are an adequate reflection of the unit's operations during this period.
2. Reference item concerning "Leveling Bearing Plates", page 3, para 3c(2). Concur with procedure but recommended USAECV and contractor policy is to level the plate as suggested, then leave the plate in place while grouting. Grout should be inserted from one side until it runs out the other. This procedure will insure the final plate position is level. No action by DA or USARPAC is recommended.
3. Reference item concerning "DEST", page 5, para 3c(9). Concur with method as a temporary means of obtaining suitable rock. The fines should be eliminated at the crusher site. No action by DA or USARPAC is recommended.

FOR THE COMMANDER:


R. P. SPENCER JR.
1LT, CE
Assistant Adjutant

CF:

CG, 20th Engineer Brigade
CO, 36th Engineer Battalion

AVHDO-DO (14 Nov 70) 4th Ind

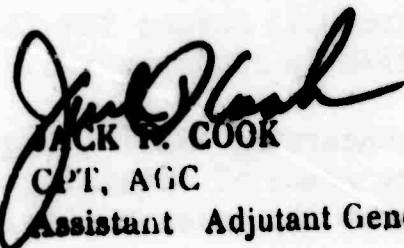
SUBJECT: Operational Report-Lessons Learned (RCS CSFOR RI) For Quarterly
Period Ending 31 October 1970

Headquarters, United States Army Vietnam, APO San Francisco 96375 28 DEC 1970

TO: Commander in Chief, United States Army Pacific, ATTN: GPOP-DT,
APO 96558

This Headquarters has reviewed the Operational Report-Lessons Learned for the quarterly period ending 31 October 1970 from Headquarters, 36th Engineer Battalion (Const) and concurs with comments of indorsing headquarters.

FOR THE COMMANDER:


JACK R. COOK
CPT, AGC
Assistant Adjutant General

Cy furn:
USAECV
36th Engr Bn

GPOP-DT (14 Nov 70) 5th Ind
SUBJECT: Operational Report of HQ, 36th Engineer Battalion
(Const), for Period Ending 31 October 1970
RCS CSFOR-65 (R2)

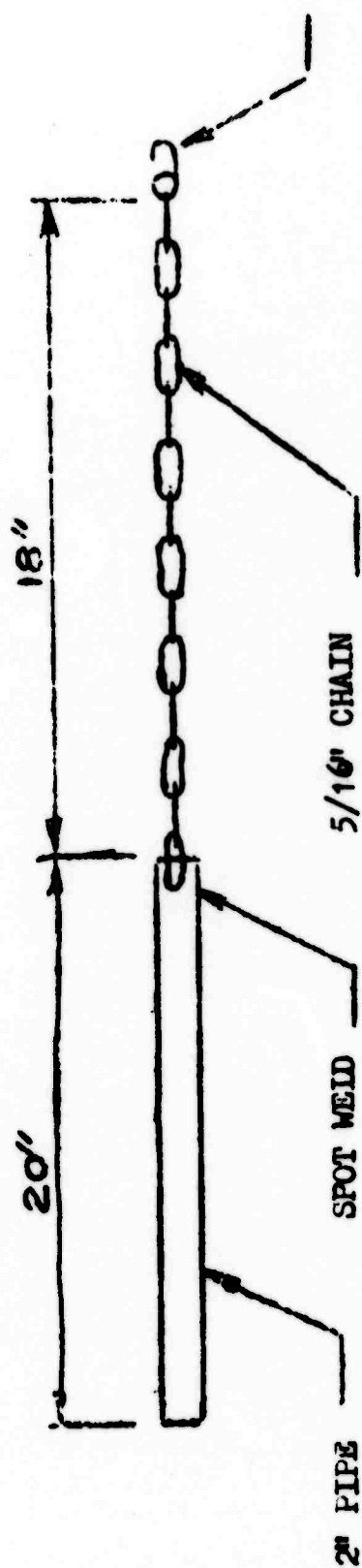
HQ, US Army, Pacific, APO San Francisco 96558 26 JAN 1971

TO: Assistant Chief of Staff for Force Development, Department
of the Army, Washington, D. C. 20310

This headquarters concurs in subject report as indorsed.

FOR THE COMMANDER IN CHIEF:

L.M. Ozaki, 1st AGC
+ L.M. OZAKI
CPT, AGC
Asst AG



1" CHAIN MADE INTO HOOK
ONE END IS BENT OVER TO
SECURE IT TO THE CHAIN

Figure 1

Incl 1

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CO, 36th Engineer Battalion		
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